

# **Recent Management of Psoas Abscess Essay**

Submitted for the partial fulfillment of master degree in

## **General Surgery**

Presented By

**Mohammed Sami Elsaid Rashed**  
**M.B.,B.Ch**

Under supervision of

**Prof. Dr. Moomen Shafeek Abu Shloa**

Professor of general surgery  
Faculty of medicine, Ain Shams University

**Dr. Wafi Fouad Salib**

Lecturer of General Surgery  
Faculty of medicine, Ain Shams University

Faculty of Medicine  
Ain Shams University  
**2010**

# كيفية معالجة خراج العضلة القطنية

**رسالة**  
توطئة للحصول على درجة الماجستير في  
الجراحة العامة

مقدمة من

الطبيب / محمد سامي السعيد راشد  
بكالوريوس الطب و الجراحة

## تحت إشراف

الأستاذ الدكتور / مؤمن شفيق أبو شلوع  
أستاذ الجراحة العامة  
كلية الطب - جامعة عين شمس

الدكتور / وافي فؤاد صليب  
مدرس الجراحة العامة  
كلية الطب - جامعة عين شمس

كلية الطب  
جامعة عين شمس

2010

## *Acknowledgment*

First, and foremost, I feel always indebted to god.

It is a pleasure to take this opportunity to express my deepest thanks and gratitude to

**Prof. Dr. Moomen Shafeek Abu Shloa**

Professor of general surgery, faculty of medicine, Ain Shams University. For his guidance, review continuous effort and excellent supervision during the whole work.

To

**Dr. Wafi Fouad Salib**

Lecturer of general surgery, faculty of medicine, Ain Shams University. I am greatly indebted for this unlimited encouragement close supervision and constant helpful criticism of this work.

Many thanks to all persons who had make this work possible.

**Mohammed Sami El-said Rashed**

# *List of contents*

**1- Introduction and aim of the work**

**2- Review of literature:**

- Pathology of psoas abscess.**
- Clinical picture.**
- Investigation.**
- Treatment.**

**3- Conclusion.**

**4- English summary.**

**5- References.**

**6- Arabic summary.**

# *List of Figures*

## **Results**

Figure (1)	Spread of psoas abscess.	5
Figure (2)	Right hip radiograph	16
Figure (3)	Left retroperitoneal abscess	19
Figure (4)	<b><u>A:</u></b> Left retroperitoneal dishomogeneous fluid collection. <b><u>B:</u></b> Percutaneous CT-guided drainage of the abscess.	20
Figure (5)	Contrast-enhanced CT scan showing a large pseudo-aneurysm of the distal aorta that appears grossly calcified.	20
Figure (6)	Digital subtraction aortography.	20
Figure (7)	Abdominal computed tomography with contrast injection showed an abdominal aortic aneurysm associated with a psoas abscess	21
Figure (8)	US showing a left bilobed iliopsoas abscess (stars)	31
Figure (9)	A transverse US showing a hypoechoic mass (star) in the left iliopsoas muscle	31
Figure (10)	A contrast enhanced CT showing a bilobed abscess (stars) in the left iliopsoas muscle as hypodense mass with peripheral enhancement.	31
Figure (11)	Coronal T2 weighted MRI demonstrated left iliopsoas abscess as hyperintense mass (star).	31
Figure (12)	<b><u>A:</u></b> CT revealing a <i>Klebsiella pneumoniae</i> liver abscess without psoas muscle involvement (arrow). <b><u>B:</u></b> Bilateral gas-forming psoas abscess (arrow) and destruction of associated lumbar spines.	32
Figure (13)	Plain pelvic radiograph shows erosion of the sacral and iliac borders of the left sacroiliac joint and condensation of the adjacent bone.	44
Figure (14)	Plain X-ray abdomen showing obliteration of right psoas shadow with right sided scoliosis.	45
Figure (15)	Abdominal ultrasound: hypoechoic soft tissue liquid collection of 180 x 61 x 62mm in diameters consistent with abscess and located at the left paravertebral muscles.	46

	<b><u>A:</u> A sagittal ultrasound scan through the right upper abdomen shows a large amount of free peritoneal fluid.</b>	
Figure (16)		47
	<b><u>B:</u> A sagittal sonogram over the left lateral abdomen delineates free peritoneal fluid in the left gutter.</b>	
Figure (17)	<b>Axial abdominal CT multiples hypodense lesions are seen in the left psoas muscle.</b>	49
Figure (18)	<b>CT scan of the abdomen and pelvis with oral and intravenous contrast reveals a large iliopsoas lesion.</b>	50
Figure (19)	<b>CT scan of right iliopsoas abscess.</b>	51
Figure (20)	<b>Computed tomogram of abdomen showing right psoas abscess extending from above the right kidney.</b>	51
Figure (21)	<b>Coronal View CT Showing a 14.5x3.0- cm Psoas Abscess Extending Along the left Psoas Muscle and Into Spinal Canal.</b>	52
Figure (22)	<b>CT scan of the abdomen shows right psoas abscess.</b>	53
Figure (23)	<b>Computed tomography scan of the pelvis showing a large right-sided abscess overlying the right psoas muscle.</b>	54
Figure (24)	<b>CT scan showing a mass in the left psoas muscle.</b>	55
Figure (25)	<b>CT scan showing psoas muscle swelling (right) with multiple low densities.</b>	55
Figure (26)	<b>Abdominal CT scan with soft tissue window shows a 6.5_X 3cm left psoas abscess (arrow).</b>	56
Figure (27)	<b>Axial magnetic resonance images show the extent of the abscess pocket.</b>	57
Figure (28)	<b>T1 weighted MRI showing 16 cm×7 cm abscess formation in the right iliopsoas area.</b>	58
Figure (29)	<b><u>A:</u> Axial T1-weighted contrast enhanced magnetic resonance (MR) image.</b>	58
	<b><u>B:</u> Coronal T2-weighted MR image.</b>	59
Figure (30)	<b>Axial Stir MRI.</b>	59
Figure (31)	<b>Magnetic resonance imaging showing the collection compatible with abscess involving the paravertebral muscles, maximus gluteus and the left psoas (arrow).</b>	60

Figure (32)	MRI of thoraco-lumbar region showing hyperintense signals in T2 weighted images in region of right psoas muscle (arrow), suggestive of abscess.	61
Figure (33)	MRI of the lumbar spine revealed multiple abscesses (arrow) in the lower part of the right iliopsoas muscle.	61
Figure (34)	MRI shows large psoas abscess on left side (5 cm * 5 cm) with inflammation of entire psoas muscle (arrow).	62
Figure (35)	(A) Anterior and (B) posterior views of a Ga-67, (C) Anterior and (D) posterior views of the technetium-99 methylene diphosphonate bone scan.	63
Figure (36)	Ga-67 scintigraphy in the posterior (left) and anterior (right) positions.	65
Figure (37)	Treatment of psoas abscess by percutaneous drainage under computed tomography guidance.	70
Figure (38)	<u>A</u> : CT shows an abscess in the right psoas.	74
	<u>B</u> : CT fluoroscopy shows the 17-gauge needle reaching the abscess.	
	<u>C</u> : Conventional helical CT shows that an 8-French pigtail drainage catheter.	
Figure (39)	<u>A</u> : CT fluoroscopy shows the 17-gauge needle reaching the abscess in the left psoas.	75
	<u>B</u> : Conventional helical CT shows that an 8-French pigtail drainage catheter.	
Figure (40)	Psoas and buttock abscesses drainage.	79
Figure (41)	<u>A</u> : Laparoscopic drainage of psoas abscess.	81
	<u>B</u> : Laparoscopic drainage of psoas abscess.	82

## *List of abbreviations*

<b><i>AIDS</i></b>	Acquired Immune Deficiency Syndrome.
<b><i>BUN</i></b>	Blood Urea Nitrogen.
<b><i>CD</i></b>	Crohn's Disease.
<b><i>CRP</i></b>	C Reactive Protein.
<b><i>CT</i></b>	Computerized Tomography.
<b><i>DM</i></b>	Diabetes Mellitus.
<b><i>E.COLI</i></b>	Escherichia Coli.
<b><i>ESR</i></b>	Erythrocyte Sedimentation Rate.
<b><i>FUO</i></b>	Fever of Unknown Origin.
<b><i>G67</i></b>	Gallium 67 scan.
<b><i>GI</i></b>	Gastrointestinal.
<b><i>HIV</i></b>	Human Immuno Deficiency virus.
<b><i>IUCD</i></b>	Intra Uterine Contraceptive Devices.
<b><i>IV</i></b>	Intra Venous.
<b><i>K.Pneumoniae</i></b>	Klebsiella Pneumonia.
<b><i>MRI</i></b>	Magnetic Resonance Imaging.
<b><i>MRSA</i></b>	Methicillin Resistant Strain Staphylococcus aureus.
<b><i>MTB</i></b>	Mycobacterial Tuberculosis.
<b><i>PA</i></b>	Psoas Abscess.
<b><i>PCD</i></b>	Percutaneous CT guided Drainage.
<b><i>PPA</i></b>	Primary Psoas Abscess.
<b><i>PTC</i></b>	Percutaneous Transhepatic Cholangiography.
<b><i>PUSGD</i></b>	Percutaneous Ultra Sound Guided Drainage.
<b><i>SEA</i></b>	Spinal Epidural Abscess.
<b><i>THA</i></b>	Total Hip Arthroplasty.
<b><i>USS</i></b>	Ultra Sonographic Scanning.
<b><i>WG</i></b>	Wegner's Granulomatosis.



## *Introduction*

Many abdominal conditions are so dramatic in their presentation that patients may go to the emergency room. Psoas abscess has an insidious onset, and patients may be seen by their primary care physician. Because psoas abscess is rare and is uncommonly discussed in primary care medical literature, primary care physicians may miss this Diagnosis.

Therefore, these practitioners need to be familiar with psoas abscess to prevent delay in diagnosis and treatment. Psoas abscess may be classified as primary or secondary, depending on the presence or absence of underlying disease. **(Babafemi T, 2001)**

Primary psoas abscess occurs probably from the hematologic spread of organisms. It can occur in patients with diabetes mellitus, intravenous drug abuse, AIDS, renal failure or immunosuppression, which may be due to AIDS or Immunosuppressant use after transplantation.

**(Garcia T et al., 2003)**

*S. aureus* is implicated in over 88% of patients with primary psoas abscess. **(Mallick IH et al., 2004)**

Conditions associated with secondary psoas abscess include gastrointestinal disease (Crohn's disease, diverticulitis, appendicitis, colorectal cancer), genitourinary problems (infection, cancer, extra-corporeal shock wave lithotripsy), musculoskeletal lesions (vertebral osteomyelitis, septic arthritis, infectious sacroilitis), vascular diseases (infected abdominal aortic aneurysm, femoral vessel catheterization) and others (endocarditis, intrauterine contraceptive device use, suppurative

lymphadenitis). **(Mallick IH et al., 2004)**

The classic symptoms of psoas abscess: fever, flank pain and limitation of hip movement are in fact atypical and have presented in only 30 percent of patients. **(Koa PF et al., 1998)**

Psoas abscess is a rare disorder that is often difficult to identify. Patients usually present with flexion of the hip and lumbar lordosis. Distal extension of a psoas abscess may present as a mass in the inguinal region. Proximity to the hip capsule can precipitate symptoms that mimic a septic hip. **(Simons GW et al., 1966)**

Plain film radiography, ultrasonography, CT scan, magnetic resonance imaging (MRI) or FDG-positron emission tomography (PET) may be used to diagnose psoas abscess. Gallium-67 scanning is also an effective method of detecting inflammatory lesions, especially abscesses.

**(Lebouthillier G et al., 1993)**

Drainage and appropriate antibiotic therapy are mainstay treatments in cases of suppurative psoas abscess. **(Finnerty RU et al., 1981)**

Patients with a suspected primary psoas abscess should be treated with anti-Staphylococcal antibiotics as an empirical treatment even before the culture results are known. In secondary psoas abscesses, broad spectrum antibiotics (covering both aerobic and anaerobic bacteria) should be considered. **(Santaella RO et al., 1995)**

Drainage of the abscess should be performed. It may be carried out through image-guided PCD, which is less invasive, or surgical drainage, which is reported by some authors to be superior to PCD in achieving prompt recovery. **(Santaella RO, et al., 1995)**

In the past, open drainage of the abscess through an iliac crest incision was often the treatment of choice. The current standard of care is percutaneous CT-guided drainage of the abscess.

**(Vatandaslar F, Alemdaroglu A,1987)**

## *Aim of the work*

This essay aims to review the literature pertaining to the subject of the recent management of psoas abscess.

Psoas abscess is a rare form of retroperitoneal infection. It was first described by Mynter in 1881 who referred this as psoitis.

**(Mynter, 1881)**

As it is a rare clinical entity thought to result from hematogenous spread of an occult bacteremia. Traditionally, this entity has been associated with tuberculous spondylitis. **(William et al., 2005)**

It may occur as a primary infection of the psoas space or as a secondary abscess from the direct extension of infection from adjacent organs. **(Ricci et al., 1986)**

### ***Anatomy:***

The psoas muscle is a retroperitoneal muscle that originates from the lateral borders of the 12<sup>th</sup> thoracic to fifth lumbar vertebrae and inserts in the lesser trochanter of the femur. In 70% of people, it is a single structure (psoas major), but 30% also have a smaller psoas minor muscle, which lies anterior to the psoas major along the same course. It is innervated by branches of L2, L3, and L4 nerves before the formation of the femoral nerve. **(Mohamed Nabil et al., 2005)**

### ***Pathology:***

The psoas muscle is in close relationship with all the major abdominal and pelvic structures. Thus, any infectious process in these regions can spread to the psoas muscle and progress into the posterior mediastinum or the anterior thigh. **(Gezer et al., 2004)**

The psoas muscle lies in close proximity to many other organs, including the sigmoid colon, jejunum, appendix, ureters, aorta, renal pelvis, pancreas, iliac lymph nodes, and spine. Thus, infections in these

organs can contiguously spread to the psoas muscle. The psoas muscle has a rich vascular supply that is believed to predispose it to hematogenous spread from sites of occult infection.

**(Mohamed Nabil et al., 2005)**

### ***Incidence:***

In a study of 142 children with psoas abscess, Bresee and Edwards reported 57% occurred on the right side, 40% on the left, and 3% had bilateral abscess. **(Bresee and Edwards, 1990)**

### ***Age and sex:***

Psoas abscess is most prevalent in young patients and occurs rarely in the elderly population. **(Gruenwald et al., 1992)**

More than 70% of cases in temperate climates occur in patients younger than 20 years with a male-to-female ratio of 3:1.

**(William et al., 2005)**

Of the reported cases of primary psoas abscess, approximately 70% of patients were younger than 20 years of age. Also the 10 - 40 year old age group accounts for 60 % of all secondary cases.

**(Gorgulu et al., 2002)**

It has been reported that men are more predominant among patients with psoas abscess, accounting for 73% of the primary and 53.9% of the secondary psoas abscess cases. **(Kao et al., 2001)**

### ***Epidemiology***

There were a significant increase in the incidence of psoas abscess from the calculated occurrence of 3.9 cases per year before 1985. The increase was attributed to improved diagnosis with the widespread use of

computed tomography (CT). It is likely that incomplete reporting, particularly in the developing world, spuriously lowered the incidence. Up to 1985, all the cases of psoas abscess reported in developing countries were primary, whereas in the United States and Canada nearly 50% of all cases were secondary. Earlier reports suggested that primary psoas abscess was more common in younger patients, with 83% of the cases diagnosed in patients less than 30 years of age. In contrast, up to 40% of the secondary psoas abscesses were diagnosed in patients more than 40 years old. Primary and secondary psoas abscesses were relatively rare in the elderly. This age distribution is different from the findings in a recent series of 18 patients from John Hopkins University School of Medicine. In that series, researchers found secondary psoas abscess (age range, two to 78 years) to be more prevalent (61%) than primary psoas abscess (age range 27 to 81 years). It is notable that 28% of the patients were over the age of 65. Of the patients with primary psoas abscess, 86% were intravenous drug users, and 57% were infected with the human immunodeficiency virus (HIV).

None of the patients with secondary psoas abscess had HIV infection or a history of intravenous drug abuse. It is possible that the incidence of primary psoas abscess will increase with the HIV pandemic. Other predisposing conditions include diabetes, immunosuppression, and renal failure. **(Mohamed Nabil et al., 2005)**

### ***Pathogenesis of psoas abscess:***

An abscess that involves the psoas space may extend along a tract from the posterior mediastinum to the anterior thigh.

**(Agrawal et al., 2002)**